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March 21, 2011 13:24 PM

## The Looming Water Crisis In Cities

By Melati Mohd Ariff

*This four-part features dwell on several water issues particularly in Malaysia in conjunction with World Water Day 2011 that falls on 22 March 2011. This year's theme is "Water for Cities: Responding to the Urban Challenge".*

*This is part one of four.*

KUALA LUMPUR, March 21 (Bernama) -- According to a United Nations (UN) forecast, more and more people are residing in cities than rural areas. By end of 2008, it was estimated about half of the world's population, that is over three billion were living in cities.

Every second, the urban population grows by two people. By 2050, about 70 per cent of the world's population would be city dwellers! The latest UN estimates stated that the world's population was expected to climb to 9.2 billion in 2050.

Water and sanitation are seen as the two main challenges in sustaining human urban settlements to the extent that some experts said without reliable access to safe drinking water and adequate sanitation cities cannot be sustainable.

According to UN's statistics, between 1998 and 2008, some 1.052 billion urban dwellers had access to improved drinking water and 813 million to improved sanitation.

Nevertheless, the urban population during that period swelled to 1.089 billion people, thus putting a dent in progress made.

The UN data also showed that about 27 per cent of the urban dwellers in the developing world do not have access to piped water in their homes.

### WATER STRESS

Many cities around the world are suffering from water stress. Experts are saying that coping with the increasing demands of water within the urban areas is one of the most pressing issues of this century!

Prof Dr Chan Ngai Weng of Universiti Sains Malaysia said in India for example, majority of the cities do not get 24 hours water supply, with average about a few hours a day.

"Some cities do not have enough water. The poor in the cities especially squatters and slum dwellers have no access to piped water.

"They also have to pay a high price for bottled water," he told Bernama, adding that it is thus very appropriate for this year's World Water Day to choose "Water for Cities" as its theme.

Dr Chan said in view of the water stress, there is an urgent need to practise water demand management.

This, he said is for all water consumers including households, hotels, businesses, factories, schools, universities and government departments.

"Water is finite ever since Earth was formed, that is, the quantity has remained the same. Water is merely recycled naturally via the Hydrological Cycle (also known as water cycle).

"However population is exploding all the time. Agriculture and industries are also expanding to keep up with human needs for food and materials.

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So, water supply can never keep up with the water demand.

"Hence, the amount of water in the future (which is the same as today's) will have to be shared by the new human beings (babies that will be born in the future) and the existing humans now.

"Worse still, humans may have to fight with agriculture and industries for this water," said Dr Chan who is also President of Water Watch Penang, a non-government organisation focussing on creating awareness for water conservation amongst the general public.

## **HIGH DEMANDS**

In Malaysia, it is estimated that between 65 to 70 per cent of the 28 million population live in the urban areas and water stress is fast developing due to high demands both for domestic and non-domestic uses.

S. Piarapakaran, President of Association of Water and Energy Research Malaysia (AWER) told Bernama that most of the cities in the country do not have a water treatment plant within their vicinity.

Very few cities in Malaysia, he said have such privileges, citing Taiping as an example.

However, he said the water catchment, Bukit Larut which is the centre point of the town, is currently subjected to threat from development. More than 200,000 people are depending on the water source, he added.

Speaking about Kuala Lumpur, he said the metropolitan city depends fully on Selangor for water supply.

"The cost of bringing treated water from faraway locations to the centre of demands is always higher. This is due to capital and operational expenditures such as cost of electricity, piping and labour. However, in Malaysia we spread all these cost equally as tariff," Piarapakaran explained.

## **POLLUTION ISSUES**

For a water source that flows through major cities such as Kuala Lumpur, Petaling Jaya, Puchong, Klang and Port Klang, water from the Klang River is not suitable to be treated for water supply.

This is due to high level of contamination that is being discharged by all level of society and businesses into the river.

According to Piarapakaran, such situation will only increase water scarcity incident.

In addition, he said many clean rivers are now drastically being polluted and with growing economy, demand and population, cities are always at risk of water scarcity as well as water stress.

"This is not only due to lack of water resources, but also due to inadequate reserve margin in water treatment and supply. Thus careful planning is vital.

"For example, if there is a water cut for a day with water treatment plant that has only five per cent reserve margin, it will be impossible for the supply system to fill up the service reservoirs, storage tanks and cater the daily demand at one go once it resumes.

"It may take days to actually fill up all the tanks and reservoir to ensure a secured supply," he added.

Piarapakaran told Bernama such a situation was observed during the Semenyih Plant shutdown due to pollution in September 2010 as well as plant shutdown for maintenance purposes in Penang Island in December 2010.

"These situations will be rampant in cities if no proper reserve margin is designed within the treatment and supply system.

"Therefore, the Malaysian government should start gazetting all rivers and its basins as well as catchment areas from further development. Areas which are subjected for development must have stringent wastewater discharge standard.

"Any new projects or industries must adhere to a stricter standard. This will reduce pollution levels. If we do not do it now, we may need to fork out hundreds of billions to revive it in the future," he stressed.

## **TOXIC WATER?**

Is our drinking water toxic? Piarapakaran was quick to say "No".

He also shared some findings of a recent survey done by AWER which showed that most of the water filter companies have provided some form of misleading advertisement or information on water filters.

"Water filters are now a trend in cities. These include claims on health, toxic water supply and energy from water. We have to leave it to science to prove it.

"Suruhanjaya Perkhidmatan Air Negara (SPAN) has appointed Ministry of Health (MOH) to conduct periodic drinking water quality monitoring. However, the conformance reports are still not published based on state achievements for public info," he said.

He also proposed that MOH to conduct more random water quality sampling compared to current fixed locations. The sampling size, he added should also reflect the growing population.

"This is to ensure more reliable results based on drinking water quality taken from water meter locations.

"Reports of water quality compliance must be made public as well. This is for the public to judge the services quality and capability of their water operators," he said.

#### **WHO STANDARD**

According to Piarapakaran, the drinking water in Malaysia is adopting World Health Organisation (WHO) standard which means treated water would not be supplied to consumers if it is not suitable for drinking.

He also explained that water operators are only responsible for the drinking water quality up to the water meter for landed properties and bulk meters for highrise buildings.

"After those locations, we are responsible as end users," he said.

In the water supply system, old piping and leakages do contribute to deteriorating water quality and water operators are responsible to rectify the problem.

However, Piarapakaran reminded end users to conduct a regular check and maintenance for the internal plumbing and storage tanks in their houses.

"Many of us do not have such check and maintenance done. Therefore, it is advisable also for consumers to check the condition of their internal plumbing and storage tank first before fixing water filter or complain to the water operators about low water quality," he said.

#### **IMPACT OF OLD PIPING**

According to the Malaysian Water Industry Guide 2010, a total of 127,275 kilometers of pipes are installed and operating in Malaysia for 2009.

The similar report records that in 1983 there was only 32,693 kilometers of pipes in Malaysia.

Based on their operating life, pipes need to be replaced periodically.

"Old cities are still having old piping. The spacing and piping locations will also be a challenge to the water operators due to limited space in cities as well as relocations due to development.

"Huge investments will be needed to carry out pipe replacement programmes and usually it is carried out in phased. Pipes deteriorate due to corrosion, fracture and accidents. This will directly impact the drinking water quality," he said.

Pipe deterioration will also cause an increase in Non-Revenue Water (NRW) levels. According to Malaysia Industry Guide 2010, average NRW recorded in 2009 was 36.63 per cent compared to 36.93 per cent in 2008.

#### **WATER LOSS**

The total treated water loss due to NRW is about 1.8 billion cubic meters in 2009.

According to Piarapakaran, based on AWER's modelling study, the total financial loss caused by NRW in Malaysia was estimated at RM1.62 billion in 2008 and RM1.64 billion in 2009.

He said the total revenue for water services sector in 2009 is RM3.93 billion. This means the total financial loss caused by NRW is about 41.7 per cent of the total revenue based on AWER's model.

"If NRW can be reduced, the surplus in water services industry can be increased to a much sustainable level. AWER also hopes that all water operators are licensed under Water Services Industry Act 2006 to ensure

NRW programmes will not be too 'expensive'.

"Pengurusan Aset Air Berhad (PAAB) will play a major role in ensuring NRW programmes do not give huge impact to tariff. This only can happen if the water operators are fully regulated.

"The reduction of NRW and pipe replacement programmes will definitely increase the drinking water quality and will be able to provide an equitable tariff. This is due to among other things reduction in treatment cost, increase in revenue and reduction in operation cost," said Piarapakaran.

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